ESG Scores - Is it the new way to build a European portfolio?

ABSTRACT

The study makes a comparison between the performance of equity portfolios characterized by high ESG score stocks and portfolios with low ESG score stocks. In particular, we analyze three market leader ESG scores: MSCI ESG Rating, Sustainalytics scores and S&P DJI/Robeco ESG Scores by examining the European stock market in two different time periods: medium/long term (five years) and short-term (one year). First of all, we associate each component of the index in relation to its MSCI ESG Rating, Sustainalytics score and S&P DJI/Robeco ESG Scores. We build two portfolios:

- first quartile portfolio 1Q (according to MSCI; Sustainalytics; and S&P DJI/Robeco ESG Scores), including securities of companies with the highest ESG score, based on ESG best-in-class screening strategy.
- fourth quartile portfolio 4Q (according to MSCI; Sustainalytics; and S&P DJI/Robeco ESG Scores), including securities of companies with the lowest ESG scores.

We aim to answer the following questions: a) do portfolios that include stocks with higher ESG scores lead to better performances than those including stocks with low ESG scores? b), Are there some sectors that drive the performance within the sector breakdown?

The results show a divergence between the composition of the first quartile, whereas there is more homogeneity in the fourth quartile.

KEY FINDINGS

- *Results show that portfolios which include stocks with a better ESG profile with all of the three different ESG scores have better results than portfolios with a lower ESG profile in all cases.*
- *The portfolio constructed with the best stocks measured through the MSCI ESG score was the best in the five-year analysis. Whereas in the one-year simulations the best portfolio was the one built on the basis of Sustainalytics.*
- *In terms of sector analysis, there is a discrepancy between the sectors that drive the performance of the best ESG portfolios based on the three different ESG scores and in the two-time periods.*

INTRODUCTION

ESG investing is a sustainable way of investing where investments are made taking the environment and human wellbeing into consideration. Sustainability, according to the definition of the UN World Commission on Environment and Development, is *"sustainable development that meets the needs of the present without compromising the ability of future generations to meet their own needs"*.

Over the last years, ESG Factors have become a 'must have' in the asset management. ESG integration techniques have now reached, especially in the equity market, a considerable granularity, starting from a simple exclusion of controversial sectors up to impact investing which pursues the objective of achieving positive environmental and social impact. The rise in sustainable investing has given birth to a new industry that trades in ESG data and ratings on companies, funds dedicated to rated companies and ESG Index providers.

In this study our attention focuses on the ability of ESG Rating to guide the choices of asset managers. More specifically, the following research issues are addressed:

1. Evaluating ESG impact on markets over a medium/long term period (5-year analysis: from June 2016 to June 2021) and over a short term period, focusing in particular on the recovery phase following the covid shock. (1-year analysis: from June 2020 to June 2021);

2. Identifying within the sector breakdown, any sectors that may drive the performance

Before this study, [1]Hawley Lukomnil (2017) noted that there are more than 600 products from over 150 organizations providing ESG data, ratings and rankings, with MSCI Inc, Sustainalytics and S&P/Robeco being the leading players. The industry is dynamic on the one hand with new ratings appearing and disappearing, and on the other, with rating organizations merging and realigning at a rapid pace.

ESG investments have achieved a leading role worldwide. The 2020 Trends Report of The Forum for Sustainable and Responsible Investment, which tracked data as of year-end 2019, found that investors are considering ESG Factors across $17 trillion professionally managed assets, that is a 42 per cent increase since 2018. In the following table we show an approach to ESG analysis that shows investors some ESG considerations

Table 1. ESG Considerations in Investment Decisions.

Environmental	Social	Governance
● Environmental remediation	● Data security & governance	◉ Shareownwer rights
● Ecosystem change	● Social cohesion & stability	◉ Say on pay
● Pollution	● Child or slave labour	◉ Tax
● Unsustainable practices	● Employement levels	◉ Institutional strength
● Resource depletion	● Health & safety practices	◉ Birbery & corruption
● Energy resources	● Inequality	◉ Rule of law
● Climate Change	● Product safety	◉ Separation of chairman/ CEO
● Carbon emissions,	● Diversity	◉ Accounting practices,
	● Infrastructure	

*Not an exhaustive list

The table shows a (non-exhaustive) list of factors that can be considered in the investment processes respectively in the environmental (column 1), social (column 2) and governance (column 3) fields.

Source: Authors' elaboration

Investors, motivated by fiduciary duty, claim that the necessity to be socially responsible as well as mitigation of ESG risk are the following nearest drivers. We observe some obstacles which avert investors from adopting ESG criteria, in particular: data quality, internal resource constraints and the need for expertise. The greatest issues concern the fact that they are not consistent across providers and not available in some market sections. According to a new survey published by the Morgan Stanley Institute for Sustainable Investing and the Morgan Stanley Investment Management carried out among 110 institutional investors, 80% of them already invest according to responsible criteria, 10 percentage points more than in 2017, and perhaps the most important finding, nearly six in ten (57%) believe that the time may come when they will only allocate their investments to management companies with a formal ESG approach.

Finally, ESG integration is hindered also by a lack of expertise, so institutions are trying to hire specialists to overcome this issue while almost half of the investors adopting active strategies are keen on in-house research, most index investors (63%) rely on the principal rating agencies, as opposed to active ones (39%).

Covid-19 has led to six implications to the world of ESG investing. Let us analyze them.

- The spread of the virus has heightened sustainability challenges, which require substantial funding in bond markets.
- Sustainable investing will perform a crucial part in shaping the recovery.
- Sustainability criteria have been integrated into models for assessing and defining the risk / return profile.
- An even greater involvement of bond investors, in particular those concerning social issues.

- Better holistic risk assessment and more effective disclosure policies.
- Increased investor focus on characteristics such as readiness and resilience in the face of long-term risks.

Sustainable investments were put to test in the COVID-19 crisis, with the opportunity to demonstrate what has been argued for years: that is, that they are a type of investment which manages to reduce risk when the market collapses.

The rest of this paper is structured as follows. Section 2 examines the concept of rating applied to ESG. Section 3 presents a review of the literature on ESG Scores. Section 4 describes the empirical model used to identify the impact of ESG Factor in portfolio. Section 5 shows the empirical results. Section 6 concludes.

RATING OF ESG FACTORS

The ESG Ratings are numerous, both in a quantitative and qualitative nature. Different scores can be created by rating agencies because they evaluate different features or different dimensions of the ESG Factor. A very common case is one of the most valuable automakers worldwide: in 2018 and 2019 Tesla was ranked with 'AA' by MSCI, while FTSE positioned in a very low ranking and Sustainalytics put the company halfway. The inconsistency of these ratings was due to MSCI's judgement about the company being excellent on carbon emissions, as opposed to FTSE, which condemned the firm for its factory emissions [2] (Dimson et al 2020).

[3]Kotsantonis and Serafeim (2019), pointed out four factors that lead to discrepancies among ESG Ratings. They are a) data inconsistencies, b) benchmark decisions, c) data attribution and d) information overload.

Firstly, measurements that indicate the quantifying of the exact same thing are various and inconsistent. This causes important differences in scores, mirroring firm-specific features, different terminology, measurements, and units of estimation.

Secondly, benchmarks differ between different rating agencies. For instance, Sustainalytics uses a wide market index as its benchmark, while S&P compares firms across their industry group.

Thirdly, there is a negative effect on ratings due to missing information at the organizational level. When a firm does not uncover ESG metrics, it is usually assigned a score of zero since rating agencies suspect the worst. A more favorable situation could occur since other rating agencies attribute a score like peers that do reveal data. Missing data could be assessed by using statistical methodologies, even if they are still not clear enough to explain why the firm is rated high or low.

Fourthly, because of the endless increase in the amount of public information and the absence of agreement in metrics, there is a stronger reason for rating agencies to differ about the scores for a specific firm.

Another factor concerns how ESG Scores are weighted. ESG Scores focus on what is significant to a company's bottom line, and comparable with its peer group. Rating agencies look at the company's exposure to industry-specific risks, based on its business activities, the size of its operations, and where it operates. Then they look at how a company is managing its risks: companies that fail to manage ESG risks have historically experienced higher costs of capital, more volatility and accounting irregularities. These agencies collect the most relevant, publicly available data and use a precision approach, designed so that ratings pinpoint the most significant risks a company faces. They collect data from thousands of sources, also

considering controversies that may indicate performance failures. For instance, to calculate ESG Scores, MSCI assigns percentage weights to each ESG risk, according to the assessment of their time periods and impact. The ESG Scores are then combined and normalized in relation to industry peers so as to achieve the overall ESG Rating. Some agencies also develop ESG indices, composed of lists of companies – chosen from a broader world of rated companies – which satisfy ESG requirements. Some notable examples are the Dow Jones Sustainability Index (DJSI), the FTSE4Good Index, and the MSCI ESG Indices.

RECENT LITERATURE

There are divergent opinions about ESG Ratings. [4]Berg et al. (2019) deepen the origins of discrepancy by dividing it into scope, measurement, and weights. Most of the differences among ESG Ratings are attributed to measurement divergence, i.e., the performance of a specific firm is measured diversely by different rating agencies. Another driver for the discrepancy is scope divergence, i.e., some rating agencies include sections that others do not. For instance, just one third of rating agencies, in their sample, consider a firm's lobbying activities. A less important reason is weight divergence, some agencies attribute different degrees of importance to categories. Moreover, the authors also recognize a 'rating agency effect', which happens when an agency judges a certain indicator positively and consequently it will tend to give positive scores to other indicators too. [5]Gibson et al (2021) show a significant consequence coming from these findings: they discover that a positive relationship exists between stock returns and ESG Rating divergence, especially in the environmental dimension. In fact, a risk premium is associated with firms having higher ESG Rating disagreement, since it could be regarded as a risk factor and thus be rewarded. The evidence is found in a portfolio, long high disagreement stocks and short low disagreement stocks, achieving returns of 21 basis points circa. [6]Pedersen et al. (2021) observe that when portfolios contain ESG information, the maximum Sharpe Ratio is reached, and it is 12% higher than that of portfolios which ignore ESG. Just a few studies have documented how corporate respond to ESG Ratings. [7]Slager and Chappel (2016), relying on the archives of the FTSE4Good Index, find that threatening exclusion from the index when scores do not meet the benchmark could lead those companies to higher corporate social performance. Another result proving that low scores could stimulate performance was found [8](Chatterji and Toffel 2010), showing that US firms scoring less on the environmental sphere increased their performance (corporate-wide toxic pollution was taken as measure).

DATA AND METHODOLOGY

This study focused on the European market, which is one of the geographical areas in which attention to ESG issues appears to be greater and is therefore accompanied by a better availability of ESG data compared to other geographical areas.

We select **EuroStoxx600 index** to represent the European market considering size and availability of sustainability data.

The study involved the following financial variables:
- **Total return**, obtained as a difference between the current share price and the share price at the beginning of the period, considering dividend reinvestment.
- **Annualized standard deviation**, calculated as the standard deviation of the daily returns multiplied by the square root of the number of periods in one year.
- **Sharpe Ratio**, calculated as the difference between the annualized return for the period, divided by annualized standard deviation, (the assumption is that the free risk rate is equal to zero).

The sector analysis is based on the Global Industry Classification Standard (GICS) taxonomy, developed by MSCI and S&P in the late 1990s, which classifies companies in the following sectors: consumer discretionary, consumer staples, energy, financials, health care, industrials, information technology, materials, real estate, telecommunications services, utilities.
The variables considered are:
- the weight of each GICS sector in the portfolios (1Q, 4Q) analyzed, which is determined in terms of market capitalization, based on the price evolution of the securities included in the analyzed strategies (1Q=best ESG/ 4Q=worst ESG) in the time period considered;
- the contribution to the portfolio returns of each sector, which defines how much of the portfolio total return depends on that sector.;
- the outperformance / underperformance of the 1Q portfolio on the 4Q for each sector.

ESG Scores considered

Briefly, we describe three different ESG Scores, currently available on Bloomberg:
- MSCI ESG Rating: which is designed to measure a company's resilience to long-term, industry material environmental, social and governance (ESG) risks. It uses a rules-based methodology to identify industry leaders and laggards according to their exposure to ESG risks and how well they manage those risks in relation to peers. It ranges from the leader (AAA, AA), average (A, BBB, BB) to laggard (B, CCC). ESG risks and opportunities can vary from industry and company. MSCI ESG Rating model identifies the ESG risks, (called Key Issues), that are most material to a GICS® sub-industry or sector [9](MSCI, 2019).
- Sustainalytics Score: which ranges between 0 and 100 (100 is better) and is based on a two-dimensional materiality framework that measures a company's exposure to industry-specific material ESG issues (MEI) and how well a company is managing those ESG Risks [10](Sustainalytics, 2019).
- S&P DJI/Robeco ESG Score: which provide Environmental, Social, and Governance scores that robustly measure companies' financially material ESG Factors. S&P DJI ESG Scores are based on the SAM Corporate Sustainability Assessment (CSA). The SAM CSA is an analysis of ESG Factors, developed and enhanced since 1999, to identify companies which are well-equipped to recognize and respond to emerging sustainability opportunities and challenges in the global market [11](S&P, 2020).

We propose this selection because they belong to leading financial providers in the elaboration of ESG Scores, ensuring high coverage in terms of rated companies around the

world. Unlike other ratings that focus only on certain aspects, their methodology takes into account a wide range of environmental, social and governance issues.

Each ESG Rating provider has developed its own score processing methodology which leads to significantly different results. The divergence regards the retrieval of data that can come from a wide range of sources such as company reports, public statements, social media and more; the actual score construction approach, from the definition of issues, considered to be materially relevant, the aggregation and weighting of ESG Factors to obtain a synthetic score. It is interesting to focus on the main similarities and differences found between the three scores examined. They can be summarized as follows:

- MSCI and Sustainalytics' scores are the result of the combination of two aspects: exposure to risks (and/or opportunities) deemed to be materially relevant as well as the ability to manage them. In S&P DJI Robeco a component relating to the company's management capacity does not explicitly emerge, but it is incorporated directly into the Corporate Sustainability Assessment (CSA) on which the score is based.

- The definition of materiality differs. MSCI uses a proprietary framework that identifies 'risks and opportunities that can reasonably be translated into substantial cost or significant profit' [9](MSCI, 2019). Sustainalytics aligns its definition of materiality to that provided by the International Financial Reporting Standards (IFRS) on the basis of which risk is significant if such as to 'have a potentially substantial impact on the economic value of a company and, hence, the financial risk and return profile of an investor investing in the company' [10](Sustainalytics, 2019). For S&P DJI Robeco 'the valuation focuses on sustainability topics, on criteria that are both industry-specific and financially materially relevant to the company's performance. The valuation and selection of securities are based on the sector they belong to [12](S&P, 2021).

- In all three cases, the analysis is conducted at the level of the relevant sector. However, normalization of ESG Scores occurs in different ways. MSCI normalizes scores using the GICS taxonomy; Sustainalytics considers 42 peer groups internally identified, S&P DJI Robeco starts from the GICS classification and then arrives at an internal taxonomy based on 61 sectors.

- Finally, each provider uses different techniques to aggregate and weigh the ESG Factors deemed materially relevant to a company and arrive at the definition of a synthetic score. MSCI 'assesses thousands of data points across 37 ESG Key Issues', focusing on the company's 'risk exposure and risk management capabilities' [9](MSCI, 2019). In the definition of the Sustainalytics Rating, on the other hand, 60-80 aggregate metrics of key ESG issues are considered based on the 'preparation, management capacity and performance of a company' [10](Sustainalytics, 2019). S&P DJI ROBECO starts from 600-1000 data points which, through the corporate sustainability assessment, are translated into 16-27 Criteria scores. In all three cases separate scores are available for each environmental, social and governance dimension in addition to the aggregate ESG Score.

Portfolios construction Methodology

First of all we associate each component of the index considered to its score: a) MSCI ESG Rating, b) Sustainalytics score c) S&P DJI ESG Scores.

Subsequently, for each ESG rating we built two portfolios:

● **first quartile portfolio 1Q** (MSCI ESG Rating; Sustainalytics score; S&P DJI ESG Scores), including securities of companies with highest ESG score, based on ESG best-in-class screening strategy;

● **fourth quartile portfolio 4Q** (MSCI ESG Rating; Sustainalytics score; S&P DJI ESG Scores), including securities of companies with lowest ESG scores (worst-in-class).

Then we used Bloomberg backtester to calculate performance and risk of each portfolio with the characteristics described above. It gives the opportunity to see how well the the strategies analyzed would have done ex-post, using historical data. Applying this tool, we have calculated the performance statistics (yield, standard deviation, Sharpe index), the total returns historical series for the reference period and the sector attribution for each portfolio considered.

The backtester also carries out a monthly portfolio rebalancing that recalibrates the weight of each portfolio component based on market capitalization.

Exhibit 5. Portfolios analyzed				
Time horizon	1 year		5 years	
Portfolio: 1q vs 4q according to ESG Score considered	1Q	4Q	1Q	4Q
ESG Score	MSCI ESG Rating	MSCI ESG Rating	MSCI ESG Rating	MSCI ESG Rating
	Sustainalytics score	Sustainalytics score	Sustainalytics score	Sustainalytics score
	S&P DJI/Robeco ESG Score	S&P DJI/Robeco ESG Score	S&P DJI/Robeco ESG Score	S&P DJI/Robeco ESG Score

Source: Authors' elaboration

FIRST RESEARCH QUESTION: RESULTS

5-Years Analysis Results

The analysis carried out over a five-year horizon shows that the 1Q portfolios constructed taking into account the three different ESG scores have in all cases better results than the corresponding 4Q in terms of return, risk and efficiency.

5-year MSCI ESG analysis 1Q vs 4Q.

Exhibit 6. 5-years Performance: MSCI-ESG ANALYSIS			
	1Q	4Q	SXXP

Total Return	93.72	74.63	53.43
Standard Deviation	16.21	17.83	16.69
Sharpe Ratio	0.99	0.78	0.65

Note: The table shows the return (row 1), risk (row 2) and efficiency (row 3) statistics respectively for the 1Q portfolio, 4Q portfolio and for the benchmark. The calculation method of each statistic is defined in detail in the «Data and methodology» section.

Source: Authors' elaboration on Bloomberg data

Regarding the total return, the top quartile (93.72) outperformed the fourth quartile (74.63) and the benchmark (53.43). The risk, represented by the standard deviation, is lower in the more sustainable portfolio (σ_{1Q} = 16.21; σ_{4Q} = 17.83; σ_{sxxp} = 16.69). Consequently, the Sharpe index and, therefore the efficiency, is higher for the first quartile (0.99) than the fourth one (0.78) and than the benchmark (0.65).

5-year Sustainalytics analysis 1Q vs 4Q.

Exhibit 7. 5-years Performance: SUSTAINALYTICS			
	1Q	4Q	SXXP
Total Return	90.91	87.26	53.43
Standard Deviation	16.72	17.09	16.69
Sharpe Ratio	0.95	0.90	0.65

Note: The table shows the return (row 1), risk (row 2) and efficiency (row 3) statistics respectively for the 1Q portfolio, 4Q portfolio and for the benchmark. The calculation method of each statistic is defined in detail in the «Data and methodology» section.

Source: Authors' elaboration on Bloomberg data

In the 5-year analysis, the study conducted considering Sustainalytics score also shows that the first quartile performs better than the fourth. The return of 1Q portfolio (90.91) outperformed both the fourth one (87.26) and the benchmark (53.43). The Standard Deviation for the strategy that includes securities with a better ESG score (16.72) is more contained than for the one that considers "less sustainable" securities (17.09) and is similar to the benchmark (16.69). The first quartile also has a better Sharpe ratio (S_{1Q} = 0.95; S_{4Q} = 0.90 S_{sxxp} = 0.65).

5-year *S&P DJI/ROBECO-ESG* analysis 1Q vs 4Q.

Exhibit 9. 5-years Performance: S&P DJI/ROBECO-ESG			
	1Q	4Q	SXXP
Total Return	82.85	80.01	53.43
Standard Deviation	17.73	18.07	16.69

Sharpe Ratio	0.85	0.82	0.65

Note: The table shows the return (row 1), risk (row 2) and efficiency (row 3) statistics respectively for the 1Q portfolio, 4Q portfolio and for the benchmark. The calculation method of each statistic is defined in detail in the «Data and methodology» section.

Source: Authors' elaboration on Bloomberg data

Even in the analysis based on the S&P DJI / ROBECO ESG score, the total return of the first quartile (82.85) is higher compared to the fourth one (80.01) and to the benchmark (53.43). The riskiness of the portfolio with the best ESG S&P DJI/ROBECO score is lower than the one of the portfolio with the worst ESG profile, but is higher than the benchmark (σ_{1Q}=17.73; σ_{4Q}=18.07 σ_{4Q}=16.69). However, the risk-adjusted return profile of the 1Q portfolio, expressed in terms of Sharpe Ratio, is the best of the three analyzed cases (S_{1Q}=0.85; S_{4Q}=0.82 S_{SXXP}=0.65).

1-Years Analysis Results

The analysis conducted over the 1-year horizon also confirms and strengthens the results of the 5-year analysis. It shows that the 1Q portfolios constructed taking into account the three different ESG scores have in all cases better results than the corresponding 4Q in terms of return, risk and efficiency.

1-year MSCI ESG analysis 1Q vs 4Q.

Exhibit 10. 1-year Performance: MSCI-ESG			
	1Q	4Q	SXXP
Total Return	36.21	23.49	28.98
Standard Deviation	15.59	16.98	16.04
Sharpe Ratio	2.46	1.52	1.94

Note: The table shows the return (row 1), risk (row 2) and efficiency (row 3) statistics respectively for the 1Q portfolio, 4Q portfolio and for the benchmark. The calculation method of each statistic is defined in detail in the «Data and methodology» section.

Source: Authors' elaboration on Bloomberg data

Regarding the total return, the top quartile (36.21) outperformed the fourth quartile (23.49) and the benchmark (28.98). The risk, represented by the standard deviation, is lower in the more sustainable portfolio (σ_{1Q} = 15.59; σ_{4Q} = 16.98; σ_{sxxp} = 16.04). Consequently, the Sharpe index and, therefore the efficiency, is higher for the first quartile (2.46) than for the fourth (1.52) and for SXXP (1.94).

1-year Sustainalytics analysis 1Q vs 4Q.

Exhibit 11. 1-years Performance: SUSTAINALYTICS			
	1Q	4Q	SXXP
Total Return	40.55	23.53	28.98

Standard Deviation	15.45	15.71	16.04
Sharpe Ratio	2.77	1.63	1.94

Note: The table shows the return (row 1), risk (row 2) and efficiency (row 3) statistics respectively for the 1Q portfolio, 4Q portfolio and for the benchmark. The calculation method of each statistic is defined in detail in the «Data and methodology» section.

Source: Authors' elaboration on Bloomberg data

In the 1-year analysis, the study conducted considering Sustainalytics score also shows that the first quartile performs better than the fourth. The return of 1Q portfolio (40.55) outperformed the fourth one (23.53) and the benchmark (28.98). The first quartile portfolio is less volatile (σ_{1Q} = 15.45; σ_{4Q} = 15.71; σ_{SXXP} =16.04) and has also a better Sharpe ratio (S_{1Q} = 2.77; S_{4Q} =1.63; S_{SXXP}= 1.94)

1-year *S&P DJI/ROBECO-ESG* analysis 1Q vs 4Q.

Exhibit 12. 1-year Performance: S&P DJI/ROBECO-ESG			
	1Q	4Q	SXXP
Total Return	34.84	26.97	28.98
Standard Deviation	17.16	17.25	16.04
Sharpe Ratio	2.18	1.70	1.94

Note: The table shows the return (row 1), risk (row 2) and efficiency (row 3) statistics respectively for the 1Q portfolio, 4Q portfolio and for the benchmark. The calculation method of each statistic is defined in detail in the «Data and methodology» section.

Source: Authors' elaboration on Bloomberg data

Even in the 1-year analysis based on the S&P DJI/ROBECO ESG score, the total return of the first quartile (34.84) was higher compared to the fourth one (26.97) and to the benchmark (28.98). The riskiness appears to be lower for the portfolio including securities with the best ESG S&P DJI/ROBECO score (σ_{1Q}=17.16) compared to the 4Q one (σ_{4Q}=17.25) but it is higher than that of the SSXP (σ_{SXXP}=16.04). Anyway, the 1Q portfolio is more efficient (S_{1Q} = 2.18) than the 4Q one (S_{4Q} = 1.70) and than the benchmark (S_{SXXP}=1.94)

SECOND RESEARCH QUESTION: RESULTS

5-Year Sector Analysis

The second analysis goal wants to verify the presence of sectors that drive performance. It starts from the comparison between the weights found on each GICS sector in the 1Q and 4Q portfolios and then it observes the effects in terms of contribution to returns, focusing on the two sectors that respectively offered the highest and lowest contribution to the outperformance of 1Q portfolios.

5-year MSCI sector analysis

Exhibit 13. 5-year sector analysis: MSCI-ESG 1Q VS 4Q					
	% Average Weight			Contribution to Return (%)		
	1Q	4Q	+/-	1Q	4Q	+/-
	100.00	100.00	0.00	93.72	74.63	19.09
Materials Sector	14.79	8.92	5.87	17.12	7.30	9.82
Consumer Staples Sector	11.64	3.12	8.52	9.86	1.67	8.18
Utilities Sector	9.91	1.40	8.52	8.78	1.57	7.20
Energy Sector	6.75	3.08	3.67	7.37	0.38	6.98
Industrials Sector	14.72	16.46	-1.74	16.37	14.14	2.24
Information Technology sector	3.47	3.05	0.42	5.76	4.60	1.16
Real Estate Sector	3.25	2.28	0.97	1.60	0.94	0.66
Health Care Sector	5.60	11.59	-5.99	5.58	8.04	-2.46
Consumer Discretionary Sector	11.15	13.20	-2.05	9.70	13.18	-3.48
Financials Sector	13.27	23.11	-9.84	9.03	13.50	-4.47
Telecommunications Services Sector	5.44	13.79	-8.35	2.55	9.30	-6.75

Note: The table shows in the first section the weight of each GICS sector in the 1Q and 4Q portfolios and the corresponding difference. The second section, instead, shows the contribution to the portfolio returns of each GICS sector for the 1Q and the 4Q portfolios and finally the outperformance/underperformance of the 1Q portfolio on the 4Q for each sector. The green line indicates the sector in which the 1Q had the highest outperformance. The red line indicates the sector in which the 1Q portfolio had the worst underperformance.

Source: Authors' elaboration on Bloomberg data

Looking at **sector analysis related to the** MSCI ESG score study, the "**Materials Sector"** shows a significant overweight in the first quartile in relation to the fourth one. The contribution to return rewards the weighting given to the sector by the 1Q strategy (+17.12%) compared to the 4Q one (+7.87 %) with a consequent outperformance of 9.25%.

On the other hand, the "**Telecommunications Services Sector**" is the most disadvantageous sector for the portfolio containing issuers with the best ESG score. It is underweighted in the first quartile compared to the fourth one. The contribution to the return, therefore, benefits the 4Q portfolio (Contribution to Return: 1Q=2.55% 4Q=9.30%) resulting in an underperformance for the 1Q portfolio of -6.75%.

5-year Sustainalytics sector analysis

Exhibit 14. 5-year sector analysis: SUSTAINALYTICS 1Q VS 4Q					
	% Average Weight			Contribution to Return (%)		
	1Q	4Q	+/-	1Q	4Q	+/-
	100.00	100.00	0.00	90.91	87.26	3.65
Information Technology sector	7.85	1.22	6.63	16.87	1.66	15.21
Utilities Sector	11.32	0.79	10.53	11.97	0.04	11.94
Materials Sector	14.62	10.81	3.81	18.41	9.20	9.20
Energy Sector	7.89	1.97	5.92	8.61	0.17	8.44

	1Q	4Q	+/-	1Q	4Q	+/-
Consumer Staples Sector	7.07	9.78	-2.70	5.98	3.75	2.23
Real Estate Sector	3.60	2.22	1.39	0.60	1.51	-0.91
Health Care Sector	6.00	10.93	-4.93	5.87	10.92	-5.06
Financials Sector	16.16	20.87	-4.71	9.30	14.91	-5.61
Industrials Sector	10.06	13.46	-3.40	8.10	16.88	-8.78
Consumer Discretionary Sector	10.56	12.51	-1.94	5.54	16.17	-10.64
Telecommunications Services Sector	4.84	15.45	-10.60	-0.34	12.03	-12.38

Note: The table shows in the first section the weight of each GICS sector in the 1Q and 4Q portfolios and the corresponding difference. The second section, instead, shows the contribution to the portfolio returns of each GICS sector for the 1Q and the 4Q portfolios and finally the outperformance/underperformance of the 1Q portfolio on the 4Q for each sector. The green line indicates the sector in which the 1Q had the highest outperformance. The red line indicates the sector in which the 1Q portfolio had the worst underperformance.

Source: Authors' elaboration on Bloomberg data

In the analysis conducted, the "**Information Technology sector**" shows an overweight in the first quartile compared to the fourth one. The effects on the contribution to the return rewards the strategy applied in a "more sustainable" portfolio (Contribution to Return: 1Q = 16.87% 4Q= 1.66%) with an outperformance of 15.21%. At the same time, the "**Telecommunications Services Sector** confirms the previous results, which underweight the 1Q compared to the 4Q one, (Contribution to Return: 1Q = -0.34% 4Q = 12.03%) with underperformance for the sustainable portfolio of -12.38%.

5-year S&P DJI/ROBECO sector analysis

Exhibit 15. 5-year sector analysis: S&P DJI/ROBECO-ESG 1Q VS 4Q						
	% Average Weight			Contribution to Return (%)		
	1Q	4Q	+/-	1Q	4Q	+/-
	100.00	100.00	0.00	82.85	81.01	1.83
Materials Sector	10.25	9.49	0.76	14.51	8.06	6.45
Utilities Sector	11.98	1.36	10.62	7.75	1.56	6.19
Energy Sector	3.51	3.07	0.43	6.42	0.36	6.06
Consumer Staples Sector	6.64	3.05	3.59	5.25	1.66	3.59
Industrials Sector	16.24	14.85	1.40	13.63	11.73	1.90
Information Technology sector	8.99	5.01	3.98	12.70	12.66	0.04
Real Estate Sector	1.68	2.27	-0.59	-0.25	0.94	-1.19
Health Care Sector	8.09	11.33	-3.24	5.90	7.73	-1.83
Financials Sector	18.87	22.58	-3.71	8.33	13.20	-4.87
Consumer Discretionary Sector	10.60	13.44	-2.84	8.85	13.95	-5.09
Telecommunications Services Sector	3.15	13.55	-10.40	-0.26	9.16	-9.42

Note: The table shows in the first section the weight of each GICS sector in the 1Q and 4Q portfolios and the corresponding difference. The second section, instead, shows the contribution to the portfolio returns of each GICS sector for the 1Q and the 4Q portfolios and finally the outperformance/underperformance of the 1Q portfolio on the 4Q for each sector. The green line indicates the sector in which the 1Q had the highest outperformance. The red line indicates the sector in which the 1Q portfolio had the worst underperformance.

Source: Authors' elaboration on Bloomberg data

Finally, as in the analysis linked to the MSCI ESG score, also in the study based on the S&P DJI / Robeco ESG Score, the "**Materials Sector**", that is overweight in the 1Q portfolio compared to 4Q one, drives the performance of the strategy based on the inclusion of stocks with a better ESG profile (Contribution to Return: 1Q = 14.51% 4Q = 8.06%) with an outperformance of 6,45%. Instead, as in the analysis linked to the MSCI ESG score and Sustainalytics score, the "**Telecommunications Services Sector**" with a low weight in the 1Q portfolio and a very high weight in the 4Q, rewards the second strategy (Contribution to Return: 1Q = -0.26% 4Q = 9.16%) with an underperformance of the portfolio containing securities with the best ESG score of -9.42%.

1-Year Sector Analysis

Unlike the 5-year analysis in which the "Telecommunications Services Sector" is the worst performer for the 1Q portfolio, in the 1-year analysis it becomes the sector that contributes more to the extra performance of all Best-ESG portfolios.

1-year MSCI sector analysis

	Exhibit 16. 1-year sector analysis: MSCI-ESG 1Q VS 4Q					
	% Average Weight			Contribution to Return (%)		
	1Q	4Q	+/-	1Q	4Q	+/-
	100.00	100.00	0.00	36.21	23.49	12.72
Telecommunications Services Sector	5.05	16.38	-11.33	0.68	-6.18	6.86
Consumer Staples Sector	11.34	3.11	8.24	3.14	0.71	2.43
Materials Sector	14.63	8.46	6.17	5.63	3.60	2.03
Energy Sector	6.17	1.82	4.34	1.85	0.41	1.45
Industrials Sector	15.63	15.95	-0.31	8.18	6.85	1.33
Utilities Sector	9.73	1.50	8.24	1.77	0.59	1.18
Real Estate Sector	3.13	2.03	1.10	0.79	0.28	0.51
Information Technology sector	3.32	4.48	-1.16	0.96	0.94	0.01
Consumer Discretionary Sector	12.02	13.29	-1.28	5.88	6.66	-0.78
Health Care Sector	5.18	11.69	-6.51	1.22	2.11	-0.89
Financials Sector	13.80	21.31	-7.51	6.11	7.52	-1.41

Note: The table shows in the first section the weight of each GICS sector in the 1Q and 4Q portfolios and the corresponding difference. The second section, instead, shows the contribution to the portfolio returns of each GICS sector for the 1Q and the 4Q portfolios and finally the outperformance/underperformance of the 1Q portfolio on the 4Q for each sector. The green line indicates the sector in which the 1Q had the highest outperformance. The red line indicates the sector in which the 1Q portfolio had the worst underperformance.

Source: Authors' elaboration on Bloomberg data

Looking at 1-year sector analysis related to the MSCI ESG score study, the "**Telecommunications Services Sector**" shows a significant underweight for the first quartile in relation to the fourth one. The contribution to return rewards the weighting given to the sector by the 1Q strategy (+0.68%) compared to the 4Q one (-5.91%) with an outperformance of 6.59%.

The "**Financials Sector**", on the other hand, that is underweight in the 1Q portfolio compared to the portfolio with worst ESG profile, benefits the fourth quartile (Contribution to Return: 1Q=6.11% 4Q=7.52%) generating an underperformance for the "best-ESG" portfolio of -1.41%.

1-year Sustainalytics sector analysis

Exhibit 17. 1-year sector analysis: SUSTAINALYTICS 1Q VS 4Q						
	% Average Weight			**Contribution to Return (%)**		
	1Q	**4Q**	**+/-**	**1Q**	**4Q**	**+/-**
SECTOR	100.00	100.00	0.00	40.55	23.53	17.02
Telecommunications Services Sector	3.75	17.32	-13.57	0.95	-6.05	7.00
Information Technology sector	10.65	1.47	9.17	7.05	0.83	6.22
Utilities Sector	12.40	0.70	11.70	4.14	0.09	4.06
Materials Sector	15.79	10.07	5.72	7.28	3.68	3.60
Energy Sector	7.94	1.07	6.87	3.30	0.34	2.96
Consumer Staples Sector	6.84	8.79	-1.95	2.24	1.36	0.88
Real Estate Sector	3.14	2.10	1.04	0.61	0.33	0.27
Financials Sector	13.56	19.34	-5.77	5.76	6.90	-1.14
Consumer Discretionary Sector	9.45	13.65	-4.20	4.58	5.75	-1.17
Health Care Sector	6.58	11.98	-5.40	1.15	2.65	-1.51
Industrials Sector	9.91	13.53	-3.62	3.50	7.64	-4.14

Note: The table shows in the first section the weight of each GICS sector in the 1Q and 4Q portfolios and the corresponding difference. The second section, instead, shows the contribution to the portfolio returns of each GICS sector for the 1Q and the 4Q portfolios and finally the outperformance/underperformance of the 1Q portfolio on the 4Q for each sector. The green line indicates the sector in which the 1Q had the highest outperformance. The red line indicates the sector in which the 1Q portfolio had the worst underperformance.

Source: Authors' elaboration on Bloomberg data

Also, in the analysis based on the Sustainalytics score, the "**Telecommunications Services Sector**" plays a central role. It is underweight in the first quartile compared to the fourth one and it is the sector that contributes more to the extra performance of the 1Q portfolio (+7%) (Contribution to Return: 1Q = 0.95% 4Q= -6.05%). At the same time, the "**Industrials Sector**" with a lower weight in the best ESG portfolio than in the worst ESG one, rewards the second strategy (Contribution to Return: 1Q = 3.50% 4Q = 7.64%) determining an underperformance of the 1Q portfolio of -4.14%.

1-year S&P DJI/ROBECO sector analysis

Exhibit 18. 1-year sector analysis: S&P DJI/ROBECO-ESG 1Q VS 4Q						
	% Average Weight			**Contribution to Return (%)**		
	1Q	**4Q**	**+/-**	**1Q**	**4Q**	**+/-**
SECTOR	100.00	100.00	0.00	34.84	26.97	7.87
Telecommunications Services Sector	2.52	15.76	-13.24	0.94	-5.98	6.92

Energy Sector	4.90	1.79	3.11	2.33	0.39	1.94
Consumer Staples Sector	6.56	3.01	3.56	2.49	0.70	1.78
Materials Sector	11.46	8.78	2.67	5.62	3.98	1.64
Utilities Sector	12.56	1.43	11.12	1.96	0.57	1.39
Industrials Sector	16.37	13.64	2.73	6.76	5.70	1.06
Real Estate Sector	1.22	1.99	-0.78	0.35	0.27	0.08
Information Technology sector	10.54	8.48	2.06	4.02	5.19	-1.17
Health Care Sector	8.35	11.22	-2.87	0.35	1.93	-1.57
Financials Sector	15.76	20.52	-4.76	5.70	7.33	-1.64
Consumer Discretionary Sector	9.75	13.36	-3.61	4.32	6.87	-2.56

Note: The table shows in the first section the weight of each GICS sector in the 1Q and 4Q portfolios and the corresponding difference. The second section, instead, shows the contribution to the portfolio returns of each GICS sector for the 1Q and the 4Q portfolios and finally the outperformance/underperformance of the 1Q portfolio on the 4Q for each sector. The green line indicates the sector in which the 1Q had the highest outperformance. The red line indicates the sector in which the 1Q portfolio had the worst underperformance.

Source: Authors' elaboration on Bloomberg data

Finally, also in the 1-year study based on the S&P DJI / Robeco ESG Score, the "**Telecommunications Services Sector**", that is underweight in the 1Q portfolio compared to the 4Q one, drives the outperformance of the strategy based on the inclusion of stocks with a better ESG profile (Contribution to Return: 1Q = 0.94%; 4Q = -5.98% outperformance =6,92%). The "**Consumer Discretionary Sector**", on the other hand, with a lower weighting in the 1Q portfolio than in the 4Q portfolio, rewards the second strategy (Contribution to Return: 1Q = 4.32% 4Q = 6.87%) to the disadvantage of the best ESG strategy with an underperformance of -2.56%.

CONCLUSIONS

ESG scores are crucial for the correct evaluation of a company in terms of environmental, social and governance metrics. Furthermore, the difficulty of finding ESG information and modeling it correctly means that synthetic judgments, such as ESG scores, are highly appreciated by investors, so their reliability and comparability is essential. However, there is currently a discrepancy between the ESG merits attributed to the same entity by different rating companies. This divergence is primarily due to the heterogeneity of the methodologies used by the various providers, but also to the scarcity and discrepancy of ESG information promulgated by companies. The purpose of the study is to highlight how these differences can have an impact for the investor on the construction of portfolios based on best-in-class ESG strategies and to analyze the results in terms of risk, return and sector breakdown. At the same time, we want to offer, for each ESG score, a comparative analysis on the performance obtainable through a "best-in-class" strategy compared to a "worst-in-class" showing how, regardless of the chosen provider, the portfolios established from issuers with a better ESG profile, obtain a higher return, lower risk and greater efficiency.

Exhibit 19. Summary of performance analysis								
		MSCI		**SUSTAINALYTICS**		**S&P DJI/ROBECO**		
	STATISTICS	**1Q**	**4Q**	**1Q**	**4Q**	**1Q**	**4Q**	**Bench**

5Y	**Total Return**	93.72	74.63	90.91	87.26	82.66	80.72	53.43
	Standard Deviation	16.21	17.83	16.72	17.09	17.73	18.07	16.69
	Sharpe Ratio	0.99	0.78	0.95	0.90	0.85	0.82	0.65
1Y	**Total Return**	36.21	23.49	40.55	23.53	34.84	26.97	28.98
	Standard Deviation	15.59	16.98	15.45	15.71	17.16	17.25	16.04
	Sharpe Ratio	2.46	1.52	2.77	1.63	2.18	1.70	1.94

Note: The table shows, for both time horizons, the summary of the risk/return statistics obtained by the 1Q and 4Q portfolios based on the three ESG scores and by benchmark.

Source: Authors' elaboration on Bloomberg data

In conclusion, looking at the summary table, it can be seen that:

● In 5-year analysis portfolios which include stocks with a better ESG profile based on three different ESG scores have, in all cases, better results than portfolios with lower ESG profile showing shares with a higher return, lower risk and greater efficiency. Indeed, the Sharpe ratio is higher in the 1Q portfolios, due both to a greater total return (higher numerator) and a lower risk (lower denominator).

● The 1-year analysis, linked to the recovery phase, not only confirms the results of the 5-year analysis, but it also strengthens them. Indeed, the difference in terms of Sharpe ratio between best ESG portfolios and worst ESG portfolios is even more pronounced in this case. This is justifiable in the light of the resilience capacity that ESG instruments showed during the market crisis triggered by Covid-19. This aspect helped to increase the allocation of capital to issuers with better ESG ratings in this period, which was already in progress, making it increasingly evident that sustainable and responsible investments can no longer be considered as simply "nice to have", they have to become a "must have".

In both time horizons the results are fairly aligned, despite the different construction methods used by the three ESG score providers, due to which the issuers that fall into the first quartile do not coincide perfectly.

Exhibit 20. Summary of compatibility					
		MSCI vs SUST	MSCI vs S&P	SUST vs S&P	MSCI vs SUST vs S&P
% compatibility	1Q	47.13	35.63	43.68	25.29
	4Q	60.71	98.81	58.33	58.33

Note: the table shows the percentage of compatibility between pairs of 1Q (4Q) portfolios built on the basis of the different ESG scores, i.e. the percentage of companies that fall into the 1Q (4Q) at the same time for two different scores. The last column, on the other hand, shows the percentage of companies that fall into 1Q (4Q) at the same time for all 3 ESG scores.

Source: Authors' elaboration on Bloomberg data

From the analysis of the coincidence of the members making up the portfolios we can see that there is an important divergence between the three scores. In particular, the divergence concerns the composition of the portfolios of the first quartile. Much more homogeneity is

found in the fourth quartiles. As the number of coinciding members between portfolios increases, the closeness of performance results also increases.

Exhibit 21. Summary of sector analysis					
		MSCI	SUST	S&P DJI Robeco	
5Y	BEST	Materials Sector	Information Technology sector	Materials Sector	
	WORST	Telecommunications Services Sector	Telecommunications Services Sector	Telecommunications Services Sector	
1Y	BEST	Telecommunications Services Sector	Telecommunications Services Sector	Telecommunications Services Sector	
	WORST	Financial Sector	Industrials Sector	Consumer Discretionary Sector	

Note: The table shows, on both time horizons, the best performer and worst performer sector for the 1Q portfolio based on the three different ESG scores

Source: Authors' elaboration on Bloomberg data

Looking at the sectorial analysis, on a 1-year time horizon it is possible to say that the sector that drives the outperformance of the first quartile is the "Telecommunications Services Sector" in all three cases analyzed. This result is in line with the role that the sector played in the last year. The same sector, in the 5-year analysis, becomes the worst performer for 1Q portfolio. Conversely, the best performer sector in a 5 years' time horizon is the Materials Sector for MSCI and S&P DJI Robeco studies, a result that is not confirmed for Sustainalytics in which the performance is justified by the Information Technology sector. The worst sector over the 1-year horizon differs in all three cases.

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